A convertible couch is shown which is constructed principally of various plastic foams and has an extending mechanism which permits conversion to a bed having a sleeping surface of normal bed height when opened. Construction of the couch is simple, lightweight and permits ready and rapid conversion from couch to bed with minimal physical effort and hazard.

19 Claims, 8 Drawing Figures
CONVERTIBLE COUCH AND MECHANISM THEREFOR

In order to maximize living space, many people employ a unit of furniture sometimes referred to as a sofa bed or convertible couch. Such a sofa bed is convertable from a couch or sofa into a single or double bed by rearranging the cushioning and support means. Often times such convertible couches do little more than spread the major cushioning over an adjacent floor portion and in effect provide a sleeping surface substantially lower in height than that of a conventional bed. Such an arrangement can be referred to as a low sleeping surface. Low sleeping surfaces are often considered by many people to be undesirable. This factor may be physical or psychological, but nevertheless usually many people prefer a bed having a normal sleeping height, such as from about 16 to 18 inches above floor level. In many instances, sofa beds or convertible couches are heavy, cumbersome devices with elaborate and sometimes physically hazardous frames and mechanisms which provide a piece of furniture of substantial weight having a mechanism which is rather complex. In recent times, efforts have been made to prepare furniture having a relatively large volume component of resilient foams such as plastic or rubber foams. Generally such foams are resilient and provide desired cushioning for a person sitting or reclining upon the furniture. Such furniture is known in the art and is represented by various pieces and methods shown in the following U.S. Pat. Nos. 3,678,553; 3,740,774; 3,747,134 and 3,751,739. Occasionally, such foam upholstered furniture is less than desirably comfortable, particularly sofa beds when in the folded, closed or sofa or sitting configuration due to the phenomenon known as "fall off." Generally in such a sofa bed the seating portion consists of two layers of resilient foam placed one on top of the other which, on opening into the bed or sleeping configuration, are positioned in side by side (edge to edge) relationship to provide a mattress. Thus, a person sitting on the furniture when it is in the sofa configuration finds an undesirable lack of support of the legs immediately behind the knees and notices a tendency to pitch forward, i.e. away from the back when one or both of the person's feet are not supported by the floor.

It would be desirable if there were available an improved sofa bed or convertible couch.

It would also be desirable if there were available an improved mechanism for a sofa bed.

It would be further desirable if there were an improved method of construction of a sofa bed employing synthetic foams.

It would also be desirable if there were an improved sofa bed which, on being placed in the bed configuration, has a sleeping surface which at least approximates conventional bed height.

These benefits and other advantages of the present invention are achieved in a sofa bed, the sofa bed comprising a frame, the frame having affixed thereto a positioning mechanism, the positioning mechanism carrying a seating portion, the seating portion comprising at least a first slidable cushioning member and a second slidable cushioning member disposed adjacent thereto, the first and second slidable members each having major faces in generally opposed spaced apart relationships when the cushioning members are in face to face relationship and selectively positionable in face to face or edge to edge relationship, a flexible cushioning layer interposed between said major surfaces, the flexible layer having an affixed major surface and an opposed major surface, the interposed flexible layer being folded upon itself and affixed to at least a major portion of each of the adjacent major surfaces of the first and second slidable members, the folded portion of the interposed flexible layer being disposed generally adjacent the frame, the flexible layer being generally unconnected to the first and second slidable members generally in the region of the fold of the flexible layer, when the slidable cushioning members are in edge to edge relationship the flexible cushioning layer having a generally planar configuration and being spaced from the positioning mechanism by the slidable cushioning members, the positioning mechanism having means to position the first slidable member remotely from the frame, and the second slidable member being pivotable about the flexible layer generally about 180° to a position adjacent the frame and between the frame and the first slidable member to thereby provide a generally planar sleeping surface, the support mechanism on extension having means to raise the first slat to a higher position when remote from the frame than when adjacent to the frame.

Also contemplated within the scope of the present invention is a mechanism for a sofa bed, the mechanism comprising a first or base member, the base member having pivotally affixed thereto a first pivot arm or extension arm, the extension arm having a first end pivotally affixed to the base member, and a second end remotely disposed thereof, a stop means to limit rotation of the extension arm, about the base member, a first support arm having a first end and a second end pivotally affixed to the second end of the extension arm by means of the first support arm first end, the first support arm at the second end, pivotally affixed to a second support member having a first end and a second end, the first end of the second support member being pivotally affixed to the second end of the first support member, the second end of the second support member pivotally affixed to a third support mechanism at the second end of the second support member, and the second end of the second support member in operative combination with the third support member defining a folding leg erecting and retracting means.

Further features and advantages of the present invention will become more apparent from the following specification taken in connection with the drawing wherein:

FIG. 1 is a schematic isometric underneath representation of a sofa bed in accordance with the present invention.

FIG. 2 is a top view of the sofa bed of FIG. 1.

FIG. 3 is a sectional view of the sofa bed of FIG. 2 taken along the line 3—3 thereof.

FIG. 4 is a schematic representation of a top view of a sofa bed such as the sofa bed of FIGS. 1, 2 and 3 in the extended or sleeping configuration.

FIG. 5 is a schematic sectional view of the sofa bed of FIG. 4.

FIG. 6 is a schematic 3-dimensional representation of a positioning assembly suitable for use in sofa beds in accordance with the present invention. The assembly is shown in its fully extended position; that is, the sleeping position.
FIG. 7 is a schematic isometric representation of the positioning assembly of FIG. 6 in a partly open position.

FIG. 8 is a schematic representation of the apparatus of FIGS. 6 and 7 in the closed position with the legs slightly extended.

In FIG. 1 there is schematically illustrated an isometric underneath view of a sofa bed or convertible couch in accordance with the present invention generally designated by the reference numeral 10. The sofa bed 10 comprises in cooperative combination a frame or fixed support means 11 and a moveable body supporting means 12 having a front, a forward or outer edge 12a. The frame 11 has a generally U-shaped configuration consisting of a back portion 13, a first end portion 14 and a second end portion 15 remotely disposed from the first end portion 14. The end portions 14 and 15 define upwardly extending arm rests 16 and 17, respectively, and a back rest portion, not shown. Legs or support members 18 and 19 are affixed to the end members 14 and 15 remote from the back member 13. Generally adjacent the legs 18 and 19 are affixed stop members 21 and 22. The stop members 21 and 22 engage detents 21a and 22a, affixed to the support portion 12. A first seating portion positioning mechanism 24 is affixed to the back member 13 and to the seating portion 12. A second positioning mechanism 25 is affixed to the back member 13 and to the support portion 12. The mechanisms 24 and 25 are disposed generally adjacent the first and second ends 14 and 15, respectively. Affixed to the seating or body support portion 12 is an operating handle or grip 27. The grip 27 is disposed generally remote from the back member 13 and from the ends 14 and 15 and is adapted to be manually grasped when it is desired to change the sofa bed from the sitting configuration to the sleeping configuration. As depicted in FIG. 1, the sofa bed is in the sitting configuration.

FIG. 2 shows a top view of the sofa bed of FIG. 1 in the closed or seating position showing the location of a back or back rest 29 extending generally above the seating or body support portion 12 and between the end portions 14 and 15. The seating portion 12 has an outer edge 12a extending between the ends 14 and 15 and remotely disposed from the back 29.

FIG. 3 depicts an enlarged sectional view of the sofa bed of FIG. 2 taken along the line 3—3 thereof. The U-shaped frame 11 is of hollow box configuration and has a lower member 33 and an upper member 34 connected at their edge portions by a first or outer spacer 35 and a second or inner spacer 36. Beneficially, the upper and lower members 34 and 33 are constructed of any convenient material such as hardboard, plywood, wood, metal or the like. Affixed to the frame 11 generally adjacent the lower member 33 is the positioning assembly 25 by means of connectors 37 and 38 which rigidly affix the assembly 25 to the frame 11. The back 29 comprises a first or rigid member 39. The rigid member 39 beneficially is formed from a synthetic resinous foam which is relatively rigid and provides structural strength to the back portion 29. Beneficially, the portion 39 is joined to the upper member 34 of the frame 11 beneficially by the use of a suitable adhesive. Affixed to the structural member 39 remote from the frame 11 and generally adjacent to the body supporting portion 12 is a back rest support portion 41 comprising a first wedge-shaped section 43 and a second alternate generally parallelepiped portion 44 to provide a backwardly slanting configuration of the back portion remote from the foam 11. The portion 43 has a generally triangular configuration having an upwardly pointing apex. Remote from the apex of the portion 43 and generally adjacent the body support portion 12 is a stiffening member 46 extending lengthwise of the back 29. Advantageously, the stiffener 46 is of plywood or hardboard and joined to the portion 43 by means of adhesives, screws or like other convenient fasteners. A layer 48 of resilient cushioning material such as flexible foam or other cushioning material is disposed over the foam 11, the member 39 and the portion 44 of the back 29. The layer 48 is in turn covered with an upholstery fabric 49 which is employed to cover the entire back 29 as well as the generally visible portions of the arms 16 and 17. Within the arm 16 is depicted a stiffener 51. The stiffener 51 is a generally planar element extending from the frame 11 upwardly to a location adjacent the uppermost portion of the arm 16. Beneficially, the stiffener 51 is of hardboard, plywood or like material and tends to transmit lateral shear forces induced in the arm 16 to the leg 15 of the frame 11. The arm 16 is constructed in a generally similar manner to that of the back 29 having a generally rigid foam core 53 affixed to the leg 15 of the frame 11 and being covered with a layer 54 of flexible foam generally corresponding to the foam 48 of the back 29 which in turn is covered with an upholstery material such as fabric 55. The body support portion 12 comprises in combination with the positioning mechanism 25 a first generally planar element or support 57 is pivotally attached by means of the positioning mechanism 25 to a second generally planar support element 58. The elements 57 and 58 are in generally spaced apart parallel relationship and generally upwardly extending adjacent the base 11 and the portion 39 of the back 29. A third generally planar support element 59 is pivotally affixed to the element 58 by means of the positioning mechanism 25. The third element 59 is horizontally outwardly extending from the rear portion 13 of the frame 11. The element 59 has an upwardly facing surface 61. The surface 61 has an outer edge 62 and an inner edge 63. The edges 62 and 63 generally extend the entire length of the body support portion 12 as do the planar members 57 and 58, the edge 62 being disposed remote from the frame portion 13 of the frame 11 and the edge 63 being disposed generally adjacent thereto. Disposed on the surface 61 and beneficially affixed thereto is a first cushioning member 65. The cushioning member 65 has a generally slab-like configuration and is generally coextensive with the surface 61. The first element 65 comprises a major body portion 66 and an edge portion 67. The edge portion 67 beneficially is a cushioning material as is the portion 66, however, the portion 67 being less readily deformed or stiffer than the portion 66. The cushioning slab 65 has a generally rectangular cross-sectional configuration and has an upper surface 69 remotely disposed from the surface 61. A flexible cushioning layer 71 is affixed to a major portion of the surface 69 and extends generally over the entire surface 69. The layer 71 defines a fold 72 of about 180°. The layer 71 is affixed to the surface 69 except in the immediate region of the fold generally designated by the reference numeral 73. The region 73 is disposed generally adjacent the portion 39 of the back 29 and remote from the portion of the first cushioning member 65. Beneficially,
the cushioning layer 71 is a flexible, air permeable member such as plastic foam, and beneficially of a flexible polyurethane foam. Disposed above the cushioning layer 71 is a second cushioning member 75. The member 75 has a configuration generally similar to the cushioning member 65 and is generally coextensive with the surface 69. The member 75 has a first or outer edge 76 and a second or inner edge 77. Disposed generally adjacent the outer edge 76 is a portion of a less resilient or stiffer cushioning material 78 generally equivalent to the portion 67 of the cushioning member 65. The height or thickness of the cushioning member 75 is less than the member 39 of the back 29 than adjacent to the outer edge 31, thus providing an upwardly rearwardly sloping support for a person sitting on the sofa. The cushioning member 75 has a lower surface 79 generally coextensive with the surface 69 of the cushioning member 65. The surface 69 is generally affixed to the folded cushioning layer 71 with the exception of a region 82 generally oppositely disposed to the region 73 of the cushioning member 65. The cushioning member 71 provides a hinged connection between the cushioning members 65 and 75 which permits motion about the fold 72 for about 180° of rotation when the seating portion 12 is moved away from the back 29. Remote from the surface 79 and adjacent to the first edge 76 is disposed a layer of soft cushioning or cosmetic upholstery 84. Advantageously, the layer 84 engages a body sitting upon the sofa. A particularly desirable configuration for such a cosmetic layer is a folded configuration wherein a single layer is folded along a centerline and a fold such as the fold 85 is outwardly disposed to provide pleasing aesthetic curvature to the terminal edge of the layer 84 exposed to view when the sofa is in the seating position.

In FIG. 4 there is schematically depicted a sofa bed in accordance with the present invention generally designated by the reference numeral 90. The sofa bed 90 is a schematic representation of a bed such as the sofa bed of FIGS. 1, 2 and 3 which has been opened into the sleeping position. The bed 90 has a back 29a, arms 16a and 17a, positioning mechanisms 24a and 25a and an exposed body support or sleeping surface 71a which is equivalent to the surfaces of the cushioning layer 71 of FIG. 3 which are depicted in contact with each other in FIG. 3.

In FIG. 5 there is schematically depicted a sectional view of the sofa bed of FIG. 4 taken along the line 5-5 thereof. The view in FIG. 5 depicted a frame 11a, a back 29a, a positioning mechanism 25a in its open position, cushioning members 65a and 75a having an exposed body supporting or sleeping layer 71a.

In FIG. 6 there is schematically represented a positioning mechanism generally designated by the reference numeral 25b. The positioning mechanism 25b is functionally identical to the positioning mechanisms 24, 24a, 25 and 25a of FIGS. 1-5. The positioning mechanism is depicted in its fully extended form; that is, the configuration it has when the sofa bed is in the sleeping configuration. The positioning mechanism comprises in cooperative combination a base member 101. The base member 101 has a first end 102 and a second end 103. The base member 101 has an upper surface 104 and an oppositely disposed support surface (not shown) adapted to engage a support such as a floor. A stop member 105 is disposed generally adjacent the second end 103 and projects from a vertically extending surface of the support member 101. Disposed adjacent the second end of the support member 101 is a pivoting extension member 108. The member 108 has a first end 109 and a second end 111. The first end 109 of the pivoting extension member 108 is pivotally affixed to the second end 103 of the support member 101. The member 108 comprises first and second parallel arms 112 and 113 disposed on opposite sides of the base member 101. The pivoting extension member 108 as depicted in FIG. 6 can pivot from the position shown against stop 105 to a position wherein the second end 111 of the member 108 is disposed generally adjacent the second end 102 of the base or support member 101. The extension member 108 can pivot relatively to the support member 101 from a position generally parallel and adjacent to member 101 through an arc of between about 110° or 170° to position the second end 111 remote from and above surface 104. In the member 101 the upper surface 104 of the member 101 are shown openings for the fastening members such as the members 37 and 38 of FIG. 3 into a base such as the base 11 of FIG. 3. A first positioning means support member 115 is disposed generally adjacent the second end 111 of the member 108. The first support member 115 has a first end 116 and a second end 117. As depicted in FIG. 6, the first support member 115 has a cross-sectional configuration of a channel having the web of the channel generally parallel to the surface 104 of the base member 101 and the flanges of the channel depending downwardly. The first end 116 of the first support member 115 is pivotally affixed to the member 108 at the second end 111. The first support member 115 is adapted to be affixed to the generally planar support 57 of FIG. 3. A recess 118 is formed in one web of the first support member 115 adjacent the first end 116. A first leg 119 having a first end 121 and a second end 122 is disposed adjacent to the second end 117 of the first support member 115 and pivotally affixed thereto by means of a pivot 124. A second support member 126 having a first end 127 and a second end 128 is disposed generally adjacent the first support member 115 and pivotally affixed thereto by means of a pivot 122. The members 115 and 126 can be folded together into a generally parallel adjacent position wherein the first end 116 of member 115 is disposed adjacent second end 128 of member 127. A second leg 130 having a first end 131 and a second end 132 is pivotally affixed to the first end 127 of the second support means 126 by means of a pivot 135. The second ends 122 and 132 of the legs 119 and 130, respectively, are pivotally joined by means of a pivot 136. A four-bar linkage is formed by portions of the support members 115 and 126 lying between pivots 134 and 135 and the first and second legs 119 and 130. The legs 119 and 130 provide means to maintain the members 115 and 126 in spaced relationship to a floor or the like. The recess 118 is provided in the first member 115 to permit a projecting portion of the pivot 136 to rest therein in a closed position. The support member 126 carries the generally planar support element (not shown) such as the element 58 of FIG. 3. The second end 128 of the second support means 126 defines a pivot means 138. Generally adjacent the pivot means 138 is disposed an operating arm 139 having defined therein a pivot means 141. Disposed adjacent the second end 128 of the second support means 126 is a third support means 144. The support means 144 has a first end 145 and a...
second end 146. The first end 145 is pivotally affixed to the pivot 138 of the second end 128 of the support member 126. The third support member 141 as depicted in FIG. 6 has first and second parallel spaced apart support members 148 and 149 which are affixed to a third generally planar support such as the support 59 of FIG. 3. Advantageously, the planar support 59 of FIG. 3 maintains the members 148 and 149 in fixed spaced apart relationship. A third leg or folding support means 151 is positioned adjacent the first end 145 of the first support 144. The third leg 151 comprises first and second parallel arms 152 and 153, respectively, which are pivotally affixed in spaced apart generally parallel relationship to members 148 and 149, respectively, remote from their connection with members 148 and 149. The elongate members 152 and 153 have pivotally supported therebetween a roll 154. A fourth leg or folding support means 157 of generally identical dimensional configuration is affixed to the second end 146 of the support 144 by means of pivots 159 and 169. A roller is pivotally supported by the fourth leg 157 remote from the pivots 159 and 160. The third leg 151 and second leg 157 are connected by means of a link arm 162 which extends parallel to members 149 and 148 and is pivotally connected to the third leg 151 by a pivot 164 and to the fourth leg by the pivot 165. A four-bar parallelogram linkage is formed by the legs 151, 157, the connecting link 162 and the member 149. A link 167 is pivotally affixed to the pivot 141 of the arm 139 and the pivot 164. The arms 139, 149 and the leg 151 form a third four-bar linkage. A spring or resilient tensioning means 168 is affixed to leg 151 and members 148 and 149. The spring 168 is tensioned to urge the legs 151 or 157 into an upright position as depicted in FIG. 6. It must be noted that in the embodiment depicted in FIG. 6, all pivots have an axis extending perpendicular to a plane generally containing the first, second and third legs.

In FIG. 7 there is depicted a schematic isometric representation of the assembly of FIG. 6 in a partly folded condition wherein the first and second support members 115 and 126 at their second and first ends respectively have been pivoted or jackknifed upwardly partly closing the positioning means toward the sofa configuration. As the second support member 126 is moveable upwardly, the operating lever 139 causes the link 167 to pull or move the third and fourth legs 151 and 157 rearwardly toward the base 101 and out of the vertical position. As the third support member is forced rearwardly, as one would do in attempting to return the sofa bed from a sleeping configuration to a sitting configuration, one ultimately reaches the configuration more or less as depicted.

FIG. 8 shows where the pivoting extension member 108 has been rearwardly folded over the base member 101 and the first and second support members 115 and 126 are folded together in the vertical position extending upwardly away from surface 104 of base member 101. For clarity of illustration in FIG. 8 the pivot 141 has been disconnected to permit the legs 151 and 157 to depend slightly downwardly from their normal closed position which is shown in FIG. 3. In the opening or closing of the assembly 250 when employed in a sofa bed, the members 148 and 149 are maintained generally parallel to the base member 101.

In operation of the convertible couch or sofa bed 10 as depicted in FIGS. 1 and 2, the bed is changed from the sitting configuration to the sleeping configuration by raising upwardly on the handle 27 as shown in FIG. 1 to disengage detents 21 and 22 and pivot members 21 and 22 respectively. The seating portion or body support means 12 is then pulled away from the frame 11 with sufficient force to cause the support means 24 and 25 to assume the configuration depicted in FIG. 6. The cushioning member 75 is then pivoted about the fold 72 about 180° toward the frame 11 to position the cushioning members in the manner depicted in FIG. 5. When it is desired to transform the convertible couch from the sleeping configuration to the sitting configuration the cushioning member 75 is folded upwardly through an arc of about 180° into the position depicted in FIG. 3. The seating portion is then positioned toward the frame 11 until the positioning means 24 and 25 assume the configuration as depicted in FIG. 3. The resilient tensioning means or spring 168 serves to aid in the unfolding of leg members 151 and 157 as the sofa bed is being opened and by proper selection of the tension of spring 168 relative to the weight of the seating portion the sofa bed can be changed from the sleeping to the sitting configuration and vice versa with minimal physical effort. The sofa bed of the present invention is particularly desirable in that it is opened or closed by a person positioned generally above the handle 27 and away from the operating mechanism. Thus, the convertible couch of the present invention minimizes any safety hazard to the person opening or closing it when compared to other convertible couches which have exposed mechanisms in which a hand may be pinched or otherwise damaged.

The upholstery of the couches in accordance with the present invention beneficially may be prepared in accordance with well known procedures. It is particularly desirable and advantageous to employ composite foams such as those that are commercially available employing an open-celled polyurethane matrix containing expanded polystyrene or styrene polymer particles. Such composite foams are well known and are set forth in U.S. Pat. Nos. 3,251,916; 3,503,840; 3,509,079; 3,607,797; 3,662,043; and 3,663,469 the teachings of which are herewith incorporated by reference thereto. Advantageously such composite foams are readily prepared in almost any desired degree of resiliency. If, for example, a foam layer such as the layers 71, 84 and 48 as shown in FIG. 3, are of open-celled polyurethane foam containing either no expanded polystyrene foam particles or up to about 5 volume percent polystyrene particles, the principal cushioning portion such as the portions 44, 65 and 75 beneficially are of similar composition but contain from about 4 to 12 volume percent expanded styrene polymer particles whereas the more rigid portions such as the edges 67 and 78 contain from about 10 to 15 volume percent expanded resilient polystyrene particles. The structural or load supporting portions of the sofa bed such as the back portion 39, the wedge portion 43 and the arm structure 53 utilize composite foam containing from about 15 to 55 volume percent of the expanded polystyrene particles. Thus, as the proportion of expanded polystyrene particles is increased, the rigidity of the foam is increased. Such composite foams are well known and are commercially available.

Although convertible couches in accordance with the present invention are beneficially prepared employing composite foams, other cushioning and upholstery ma-
terial may also be employed including the foams of rubber, both synthetic and natural. The suitability of any particular cushioning or upholstery material or any particular location in the convertible couches of the present invention is readily determined by means of the indentation load deflection. The indentation load deflection is meant the force in pounds per square inch to cause the cushioning material to be compressed to a thickness which is a specified percentage of its original thickness. Most commonly these values are taken at 25 percent compression and at 65 percent compression. The force required for compression of 25 percent, that is to a thickness of 75 percent of the original thickness, is an indication of the initial softness of the foam; while the value at 65 percent compression, that is to a thickness of 35 percent of the original thickness of the foam, is indicative of its load bearing characteristics. For example, a foam having a low indentation load deflection at both 25 percent and 65 percent is soft and compresses readily and is usually not desirable as the only cushioning element employed over a hard surface. Generally for use in a convertible couch in accordance with the present invention a structural foam such as components 39 and 53 of FIG. 3 have a 25 percent indentation load deflection of 50 pounds per 50 square inches as a minimum value and a 65 percent minimum value of 250 pounds per 50 square inches. Advantageously a minimum 65 percent value is 400 pounds per 50 square inches or greater. Beneficially such relatively rigid foams may also be used for edges 67 and 78 of FIG. 3. Components such as components 65, 75, and 44 of the couch of FIG. 3 have a indentation load deflection of from about 18 to 35 pounds per 50 square inches, and beneficially from about 22 to 28 pounds per 50 square inches and a 65 percent indentation load deflection of 63 to 122 pounds per square inches and preferably from about 84 to 122 pounds per 50 square inches. A more flexible foam is required for portions of the convertible couch of the invention indicated in FIG. 3 by reference numerals 48, 54, 71 and 84 and such a material has indentation load deflection of from about 10 to 30 pounds per 50 square inches at 25 percent and beneficially from 10 to 15 pounds per 50 square inches. At 65 percent compression the value is from 18 to 54 pounds per 50 square inches and preferably from 18 to about 27 pounds per 50 square inches.

Convertible couches prepared in the foregoing manner with composite foams are extremely sturdy and light in weight. Oftentimes in order to provide the desired mass that is usually expected of a piece of furniture of the size of the sofa bed of the present invention, it is desirable to fill or at least partially fill the hollow frame 11 with a material such as sand.

As is apparent from the foregoing specification, the present invention is susceptible of being embodied with various alterations and modifications which may differ particularly from those that have been described in the preceding specification and description. For this reason, it is to be fully understood that all of the foregoing is intended to be merely illustrative and is not to be construed or interpreted as being restrictive or otherwise limiting of the present invention.

What is claimed is:

1. A sofa bed, the sofa bed comprising a frame, the frame having affixed thereto a positioning mechanism, the positioning mechanism carrying a seating portion, the seating portion comprising at least

2. A first slab-like cushioning member and

3. A second slab-like cushioning member disposed adjacent thereto, and selectively positionable in face to face or edge to edge relationship, the first and second cushioning members each having major faces in generally opposed spaced apart relationship when the cushioning members are in face to face relationship.

4. A flexible cushioning layer interposed between said major surfaces, the flexible cushioning layer having an affixed major surface and an opposed major surface, the flexible cushioning layer comprising generally a layer of cushioning material folded upon itself at a folded portion and the flexible cushioning layer affixed to at least a major portion of each of the adjacent major surfaces of the first and second cushioning slabs.

5. The folded portion of the flexible cushioning layer being disposed generally adjacent to the frame, the flexible layer being generally unconnected to the first and second cushioning members in the region of the fold of the flexible layer.

6. When the cushioning members are in edge to edge relationship the flexible cushioning layers having a generally planar configuration and being spaced from the positioning mechanism by the cushioning members.

7. The positioning mechanism capable of positioning the first cushioning member remotely from the frame, and

8. The second cushioning member being pivotable about the flexible cushioning layer generally about 180 degrees to a position adjacent to the frame and between the frame and the first cushioning layer to thereby provide a generally planar sleeping surface and the support mechanism on extension raising the first slab to a higher position when remote from the frame then when adjacent to the frame.

9. The sofa bed of claim 1 wherein the cushioning members are of synthetic resinous foam.

10. The sofa bed of claim 1 wherein each of the cushioning elements has a less resilient portion disposed along one edge thereof with the further limitation that the less resilient portions are in generally parallel and adjacent relationship when the cushioning elements are in face to face relationship.

11. The sofa bed of claim 1 including a back portion affixed to the frame.

12. The sofa bed of claim 4 including arm portions affixed to the frame.

13. The sofa bed of claim 5 wherein the back and arms comprise synthetic foam.

14. The sofa bed of claim 1 wherein the cushion members comprise composite foam.

15. The sofa bed of claim 6 wherein the cushioning members, back and arms comprise composite foam.

16. A sofa bed, the sofa bed comprising a frame, the frame having affixed thereto a positioning mechanism, the positioning mechanism carrying a seating portion, the seating portion comprising at least a first foam plastic slab and
a second foam plastic slab disposed adjacent the first foam plastic slablike cushioning members, the first and second foam plastic members each having major faces in generally opposed spaced apart relationship.

drainage, a flexible foam layer interposed between said major surfaces, the flexible foam having an affixed major surface and an opposed major surface, the interposed flexible foam comprising generally a layer of foam folded upon itself and having a folded portion of the flexible foam being affixed to at least a major portion of each of the adjacent major surfaces of the first and second foam slabs, the folded portion of the interposed flexible foam being disposed generally adjacent the frame.

the flexible foam being unaffixed to the first and second foam slabs generally in the region of the fold of the flexible foam, the positioning mechanism being capable of selectively positioning the first foam slab remotely from the frame, and

drainage, the second foam slab being pivotable about the flexible foam folded portion generally about 180° to a position adjacent the frame and between the frame and the first foam slab to thereby provide a generally planar sleeping surface, a pair of generally parallel support mechanisms connecting the seating portions of the frame each of the mechanisms having:

- a base member affixed to the frame wherein each of the mechanisms comprise
- a first or base member, the base member having pivotally affixed thereto
- a first pivot or extension arm, the extension arm having a first end pivotally affixed to the base member and a second end remotely disposed therefore,
- a stop means to limit rotation of the extension arm about the base member,
- a first support arm pivotally affixed to the second end of the extension arm by means of
- a first support arm first end,
- a first support arm second end,
- a second support member having
- a first end and
- a second end, the first end of the second support member being pivotally affixed to the second end of the first support member, a first leg member having a first end and second end, the first end of the first leg member being pivotally affixed to the first support member,
- a second leg member pivotally affixed to the second support member by means of the first end of the second leg member, the second ends of the first and second leg members being pivotally affixed to each other, thereby providing
- a four-bar linkage which comprises a portion of the first support member adjacent its second end, a portion of the second support member adjacent its first end and the first and second leg members, the second support member having
- a second end pivotally affixed to
- a third support member, the second end of the second support member defining an erecting lever, the third support member having
- a first end and
- a second end, the first end being pivotally affixed to the second end of the second support member, the third support member having pivotally affixed thereto

- a third leg adjacent the first end of the third support member,
- a fourth leg pivotally affixed to the second end of the third support member, the third leg and the fourth leg at a location generally adjacent the third support member being pivotally affixed to
- a leg actuating member, the leg actuating member, a third support and the third and fourth leg portions lying between the points of pivotal attachment to the third support member and the leg actuating member forming a parallelogram four-bar linkage,
- a link member pivotally affixed to the second support member actuating lever and the leg actuating member with the further limitation that all pivotal connections have generally parallel axes of pivotal motion and that when first, second and third support members are disposed in a generally colinear arrangement, the second ends of the first and second legs and portions of the third and fourth leg members remote from the third support member lie generally in a plane containing the lowermost portion of the base member with the further limitation that the first, second and third support members of each mechanism have affixed thereto the first, second and third generally planar support elements respectively, the first, second and third planar support elements extending generally lengthwise of the frame and being angularly positionable relative to each other.

10. The sofa bed of claim 9 wherein the cushioning elements are of composite synthetic resinous foam.

11. The sofa bed of claim 9 wherein each of the cushioning elements has a less resilient portion disposed along one edge thereof with the further limitation that the less resilient portions are in generally parallel and adjacent relationship when the cushioning elements are in face to face relationship.

12. The sofa bed of claim 9 a back portion and arm portions affixed to the frame.

13. The sofa bed of claim 12 wherein the back and arms comprise synthetic foam.

14. A mechanism for a sofa bed, the mechanism comprising:

- a first or base member, the base member having pivotally affixed thereto
- a first pivot or extension arm, the extension arm having a first end pivotally affixed to the base member and a second end remotely disposed therefore,
- a stop means to limit rotation of the extension arm about the base member,
- a first support arm having a first end and a second end pivotally affixed to the second end of the extension arm by means of the first end of the first support arm, a first leg member having a first end and second end, the first end of the first leg member being pivotally affixed to the first support arm,
- a second leg member pivotally affixed to the second support member by means of the first end of the second leg member, the second ends of the first and second leg members being pivotally affixed to each other, thereby providing
- a four-bar linkage which comprises a portion of the first support member adjacent its second end, a portion of the second support member adjacent its first end and the first and second leg members, the second support member having
- a second end pivotally affixed to
- a third support member, the second end of the second support member defining an erecting lever, the third support member having
- a first end and
- a second end, the first end being pivotally affixed to the second end of the second support member, the third support member having pivotally affixed thereto

- a third leg adjacent the first end of the third support member,
in operative combination with the third support member means defining a folding leg erecting and retracting means.

15. The mechanism of claim 14 wherein the folding leg erecting mechanism comprises a parallelogram four-bar linkage opened and closed by rotation of the third support member relative to the erecting and retracting means.

16. The mechanism of claim 15 including means to resiliently tension the four-bar linkage into a leg erecting position.

17. The mechanism of claim 16 wherein the means to resiliently tension the four-bar linkage is a spring.

18. The mechanism of claim 14 wherein the folding support means comprises a first leg member pivotally affixed to the first support member, a second leg member pivotally affixed to the second support member, the first and second support members being pivotally attached remote from the first and second support means to form a four-bar linkage.

19. A mechanism for a sofa bed, the mechanism comprising

- a first or base member, the base member having pivotally affixed thereto
- a first pivot arm or extension arm, the extension arm having a first end pivotally affixed to the base member and a second end remotely disposed from the first end,
- a stop means to limit rotation of the extension arm about the base member,
- a first support arm pivotally affixed to the second end of the extension arm by means of a first support arm second end pivot,
- a second support member having a first end and a second end, the first end of the second support member being pivotally affixed to the second end of the first support member,
- a first leg member pivotally affixed to the first support member, the first leg member having a first end and second end, the first end of the first leg being pivotally affixed to the first support member,
- a second leg member pivotally affixed to the second support member by means of the first end of the second leg member, the second ends of the first and second leg members being pivotally affixed to each other, thereby of the third and fourth leg members remote from the third providing a four-bar linkage which comprises a portion of the first support member adjacent its second end, a portion of the second support member adjacent its first end and the first and second leg members, the second support member having a second end pivotally affixed to the second end of the second support member defining an erecting lever.

20. A third support mechanism having a third support member, the third support member having a first end and a second end, the first end of the third support member being pivotally affixed to the second end of the second support member

- a third leg adjacent the first end of the third support member and pivotally affixed thereto,
- a fourth leg adjacent the second end of the third support member, the third leg and the fourth leg at a location generally adjacent the third support member being pivotally affixed to a leg acting member, the leg acting member, the third support member and the third and fourth leg portions lying between the points of pivotal attachment to the third support member and the leg acting member forming a parallelogram four-bar linkage,
- a link member pivotally affixed to the second support member acting lever and to the leg acting member with the further limitation that all pivotal connections have generally parallel axes of pivotal motion and that when first, second and third support members are disposed in a generally colinear arrangement, the second ends of the first and second legs and portions of the third and fourth leg members remote from the third support member lie generally in a plane containing the lowermost portion of the base member.

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